



NOAA FISHERIES

Northeast Fisheries Science Center

Data Collection and Management Program Review Northeast Fisheries Science Center Summary and Response November 2013

Introduction

During August 5-8, 2013, six peer reviewers evaluated the Northeast Fisheries Science Center's data collection in support of the Magnuson-Stevens Act. The reviewers considered fishery-dependent and fishery-independent data sources. They examined how we collect, manage, ensure the quality of, and deliver these data. Each reviewer subsequently provided a report evaluating the data and collection programs, and providing advice on future directions.

I am especially pleased about the uniformly positive comments from peer reviewers regarding our fishery-independent data collection capabilities, especially the bottom-trawl ecosystem survey. We are very aware of the benefits we derive from this long-term, multi-purpose survey and it was encouraging to have the varied uses and applications of the survey data recognized by external scientists.

All of the reviewers noted the paucity of time available for staff to concentrate on new research to improve assessments. We agree that demand for stock assessment products has led us to postpone this kind of work and we intend to address this directly.

Several other constructive suggestions were made for improving future NMFS science program reviews, which certainly will be considered in organizing and conducting the FY14 Stock Assessment Methods Peer Review.

To address the reviewers' recommendations we must systematically evaluate our work, identify priorities, and redirect staff and other resources toward resolving developing or long-standing data issues. Our strategic planning process will be the vehicle for doing so. Within this annual process we identify and prioritize research and assessment activities for the upcoming fiscal year.

More information on the NEFSC review is posted here:

http://www.nefsc.noaa.gov/program_review/

Acknowledgments

At the August meeting, the peer reviewers were presented with a wealth of information covering all aspects of our fishery data collection. This information was carefully developed and presented by our Northeast NOAA Fisheries staff. I would like to express my appreciation for each and every participant's contribution and attention during this intense week of extensive discussion. The comments from the public participants who responded to our invitation to attend the review and those contained in the peer-review reports were insightful, thoughtful, and candid. They will help us to improve our data collection programs and to establish priorities as the demand for data escalates and our resources for meeting this demand become more constraining.

The panelists for this review were:

- Jon Helge Vølstad, Institute of Marine Research, Norway
- Paul Frenandes, University of Aberdeen
- Rick Stanley, Department of Fisheries and Oceans, Canada
- David Somerton, NOAA Fisheries Service
- Beth Turner, NOAA National Ocean Service
- Joseph E. Hightower, US Geological Survey

Remarks

I am especially pleased about the uniformly positive comments from peer reviewers regarding our fishery-independent data collection capabilities, especially the bottom-trawl ecosystem survey. We are very aware of the benefits we derive from this long-term, multi-purpose survey and it was encouraging to have the varied uses and applications of the survey data recognized by external scientists.

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Next we provide our initial responses to reviewer comments on the substantive issues identified in the peer-review panel summary report. A number of minor issues were also included in the review comments (for example, evaluation of shorter research vessel tow times; better calibration of both trawl and dredge surveys; and developing minimum biomass estimates from fishery-independent surveys.) Although these are not addressed specifically in what follows, many will be taken into account as we take action to respond to the larger issues.

Issue 1: Apply a probability-based sampling approach to fishery dependent monitoring, particularly port sampling of commercial landings, and use a unique trip-specific identifier to better link vessel trip data to catch data.

Implementing a probability-based sampling approach to commercial sampling is a significant undertaking. Implementing a unique trip-specific identifier can proceed without revising the probability sampling design.

Both projects are under discussion now by the Fishery Dependent Data Collections Working Group, recently established internally by the Northeast Regional Office and the Northeast Fisheries Science Center. The working group is charged with improving the efficiency, consistency, correctness, data quality, and timeliness of all our fishery-dependent data delivery, with full consideration of users' interests and needs. Members are working on a variety of issues which will include:

- **Implementing a probability-based approach to commercial sampling:** This is a significant, long-term undertaking and will likely be taken up by the Fishery Dependent Data Collection Working Group in FY15. During FY14, Center staff will develop a proposal for evaluating this approach. This proposal will be considered for adoption in FY15 through the NEFSC strategic planning/project prioritization process.
- **Implementing a trip-specific identifier:** This is one of the first topics taken up by the committee. A plan is in development now. The NEFSC will have principal responsibility for designing the trip-specific identifier and we expect the identifier will be implemented as part of the Northeast Region's reporting system within two years.

Issue 2: Develop and apply Management Strategy Evaluation (MSE) techniques to evaluate possible changes in sampling and data management to examine sensitivities of stock assessment data to the use Harvest Control Rules (HCRs), and to investigating HCRs based on simpler stock assessment approaches than are currently used in the Northeast.

The panel recommended application of Management Strategy Evaluation (MSE), a general approach for addressing problems not readily amenable to analytic solutions, to evaluate sampling frequency at both the macro- and micro-scale. We recognize the usefulness of MSEs to address multiple objectives including many of those considered during the review

At the macro-scale, MSE can be used to evaluate the effects of conducting resource surveys and sampling at different frequencies or levels of comprehensiveness. At the micro-scale, MSE can be used to evaluate the effects of

various sampling strategies for determining catch and population age compositions. Given the variability of at-sea conditions, effort “optimization” may not be attainable in the classic sense, but nevertheless significant advances can be made.

Our plans include:

- **Establishing a NEFSC internal MSE Working Group:** The first task of the working group is to develop a comprehensive plan for MSE work and submit the plan as a project proposal for implementation in FY15.
- **Establishing an internal working group to develop objective criteria for prioritizing Northeast Fisheries Science Center sampling requirements:** This group has just been formed and is looking first at fishery-independent surveys, but will subsequently take on other types of sampling such as ageing.
- **Implementation Plan:** By FY16, a plan will be sufficiently developed for evaluating sampling optimization and trade-offs such that science center staff can devise project plans to implement the methods, for execution beginning in FY17.

The peer reviewers also recommended the use of MSE to address harvest control rules, especially to evaluate which harvest rules are most appropriate when assessment retrospective patterns are strong. The NEFSC recognizes the value of developing a more rigorous approach for the retrospective problem in particular, and many other tasks in general. This discussion is more related to stock assessments. Therefore we intend to include further discussion of applying MSEs to stock assessment issues, including our current approaches for dealing with strong retrospective patterns, in the FY2014 NMFS program review on stock assessment methods and the stock assessment process.

Issue 3: Better integrate NEFSC and state fishery-independent surveys to improve comparability, and therefore the utility of state surveys in developing a stock assessment.

Given that state surveys are not federally funded and are designed to meet state requirements, any changes in their designs would have to preserve their usefulness in meeting the state’s objectives. This may not be possible or efficient.

That said, we often find useful signals in the state survey data. Depending on the area covered and timing, the state data can reflect changes in nearshore fish availability, recruitment success in response to ecological drivers such as climate or oceanographic regime changes, shifts in distribution and range, and clines and areal patterns in recruitment success—all are important as we move toward more integrated ecosystem assessments.

Although some NEFSC assessments already evaluate correlations of abundance among different surveys, there may also be opportunities to estimate performance of individual surveys by comparing survey trends with the abundance trends from the stock assessments themselves, as noted by panelists. To better document state survey data are considered in assessments we will:

- **Add assessment term of reference:** Beginning in FY15, a term of reference will be added for all Northeast benchmark stock assessments to evaluate the utility of state surveys in all cases where the data from these surveys are available.

Issue 4: Develop and make better use of pelagic and benthic survey methods.

The NEFSC is committed to improving capability in this area by: (a) piloting an integrated pelagic survey; (b) re-evaluating our Atlantic herring acoustic survey; and (c) extending the use of HABCAM in more benthic surveys.

- **Integrated Pelagic Survey:** The first integrated survey was conducted in early 2012, and the second survey occurred in November 2013. These surveys provide data on plankton, fish, invertebrates, marine mammals, sea birds, and sea turtles as well as a range of environmental and oceanographic data. The data collected have application for fisheries stock assessments, ecosystem status reports, satellite development, and offshore energy planning. Initial emphasis is on logistics and operations for such a multi-purpose survey. In FY14 the initial cruises will be reviewed and evaluated for further development.
- **The NEFSC Atlantic herring hydroacoustic survey:** This survey is undergoing a one-year hiatus for re-evaluation and perhaps redesign. Subject to availability of funds, we expect the survey to be re-initiated in FY15. Acoustical data that have been collected are being analyzed, to better understand how a separate herring survey could work. A manuscript is being prepared for submission early in 2014.

- **HABCAM:** The HABCAM technology was developed especially for the NEFSC and first used in Atlantic sea scallop surveys. A pilot project to extend the use of HABCAM to other benthic surveys was initiated this past summer, sponsored by the Bureau of Ocean Energy Management and intended to assist that agency with evaluating potential sites for wind farms. We will continue to seek ways to expand use of HABCAM in other aspects of our science program.

Issue 5: Improve cooperative research surveys and activities so that the data collected can be readily used in stock assessments.

We agree that there are challenges with moving industry-based fishery-independent survey data into the assessment process. To address this issue we intend to:

- **Report on flat fish and skate survey nets:** Complete analyses and prepare a technical report on sweep differences in survey net catchability for flatfish and skates to be used in stock assessments. A report is expected in the summer of 2014.
- **Improve timeliness of cooperative survey data for use in assessments:** We have used cooperative research products in a number of stock assessments, especially when the research is focused on critical stock assessment issues. To make this transfer more efficient, in FY14, we will submit a project plan for timely analysis and reporting of cooperative research survey activities of interest for stock assessment development for implementation in FY15.

We also agree that we can improve other data collection for stock assessment purposes. We intend to:

- **Expand both survey geographical coverage and the use of survey approaches that use gear other than trawls:** Continue to use both NEFSC cooperative research and the research set-aside projects to develop species-specific surveys, non-trawl pilot surveys, and comparative gear studies investigating survey catchability. Several projects on the use of fixed gear surveys are presently underway in both the Mid Atlantic and New England.
- **Complete eVTR data analysis:** Vessels that harvest the majority of squid in the region have been fitted with electronic vessel trip reporting equipment that is also tied into vessel monitoring systems. This allows vessels to transmit not only trip data required by regulation, but also tow-based catch data consistent with that obtained by fishery observers. It has potential for use in stock assessment if quality assurance and control similar to that for other catch data can be developed and implemented. In FY14, a project with academic partners will begin that analyzes these data for use in squid and butterfish assessments, with a report expected in the summer of 2014.
- **NEAMAP and Maine-New Hampshire surveys:** In addition to state-conducted surveys, two other non-federal, comprehensive regional inshore surveys are conducted: the Northeast Area Monitoring and Assessment Program (NEAMAP) survey and the Maine-New Hampshire-Massachusetts survey. As the NEAMAP survey time series develops, spatial patterns will be compared with those in other surveys and more generally with coast-wide patterns. This will inform whether a more formalized protocol for inclusion/exclusion of survey data series is warranted or possible.

Issue 6: Invest more (>20%) of the stock assessment staff's time in research to substantially improve stock assessment approaches (including spatial models) and the scientific foundation for management activities.

This recommendation is somewhat outside the terms of reference for this program review and we expect it will be considered more thoroughly during the FY14 Stock Assessment Methodology Program Review. Nevertheless, we agree that the NEFSC has postponed many fundamental investments in stock assessment methodology. We have been focused on meeting the Magnuson-Stevens Act (MSA) requirements for annual catch limits and accountability measures, and on resolving the controversies generated by applying these requirements to severely depressed stocks that are not recovering despite relatively low fishing pressure in recent years. Some balancing will occur through our annual planning and implementation process. We also intend to:

- **Develop a Workload Analysis:** Develop a plan for quantifying the current workload associated with the assessment products we prepare to better identify and evaluate trade-offs, and to improve decisions about resource allocation
- **Seek Peer Review Discussion:** Discuss this approach at the FY14 Stock Assessment Methods Peer Review

Issue 7: Expand observer coverage to match the spatial and fishery data requirements needed for stock assessments.

We agree that this is a central goal for the NEFSC, although there are many competing demands for observer resources. Currently, not all fishery components are adequately sampled for stock assessment purposes because the available observer program funds are typically directed toward specific fisheries, regions, or objectives (for example, New England groundfish discard and marine mammal bycatch.) To balance coverage and data requirements we will:

- **Use SBRM:** Continue to prioritize sampling in support of assessments using the NMFS Northeast Standardized Bycatch Reporting Methodology, a reporting and methodology included in all Northeast fishery management plans and used to consistently assess the amount and type of bycatch occurring in the fisheries.
- **Involve Councils:** Continue to work with fishery management councils to ensure that observer deployments are as productive as possible.
- **Prepare for industry-funded observers in more fisheries:** Estimate costs for industry-funded observers, and investigate possible mechanisms for implement